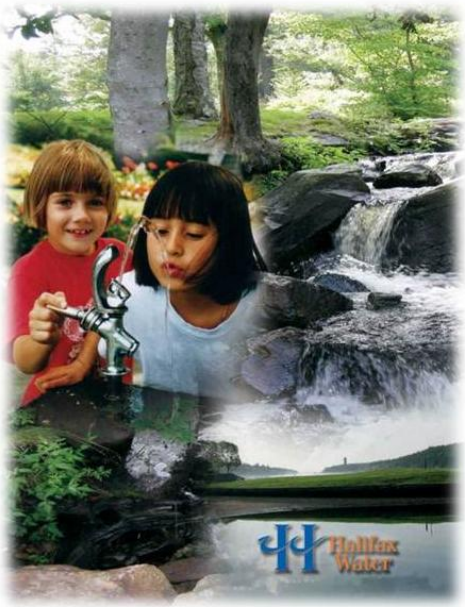
Welcome all to this WRF – SW4EU meeting



Water Research Foundation

SW4EU

April 17th, 2015

SW4EU

Please hold the line

Please hold the line

Please hold the line……..

4 steps:

1. Solve the problem
2. Find out what happened?
3. Who where involved?
4. What can we do to prevent this from happening again?

The European Innovation Partnership on Water (EIP)

- Established priority areas related to the challenges in water supply distribution networks, focusing on resource efficiency, Smart Water Management and decision support systems.
- Although the technology components for Smart Water Management are available, the route to application is still uncertain
- The main hurdles are: lack of integrated and open solutions; difficulty of comply intelligence awareness and lack of political and regulatory support.

The challenge

European water utilities face many problems related to their 3.5 million km's of distribution networks:

- Large parts of water distribution networks have to be rehabilitated requiring investments of € 10 billion/year.
- Prioritization and optimization of investments is needed urgently.
- In many countries, water quality needs improvement in order to reduce health risks and resources for water production and distribution must be used more efficiently.

Old networks

Water quality

Investment Priorization

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SmartWater4Europe SW4EU

- Demonstration of integrated smart water supply solutions at 4 sites across Europe.
- Total Cost: € 12 million.
- EC Contribution: € 5,999,288,00.
- Duration: 4 year.
- Start Date: 1st of January 2014.
- Consortium: 12 innovative SMEs, 3 water utilities, 3 research institutes, 1 company and 2 platform organisations.
- Project Web Site: http://www.smartwater4europe.com
- http://sw4eu.com

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Smart Water Grid

Real time

- Sensor data
- (Social) media

Static

- Asset data
- Customer data

Business Intelligence

- **Proactive/Preventive** control & measures
- Information provision

Increased process efficiency

Increased customer satisfaction

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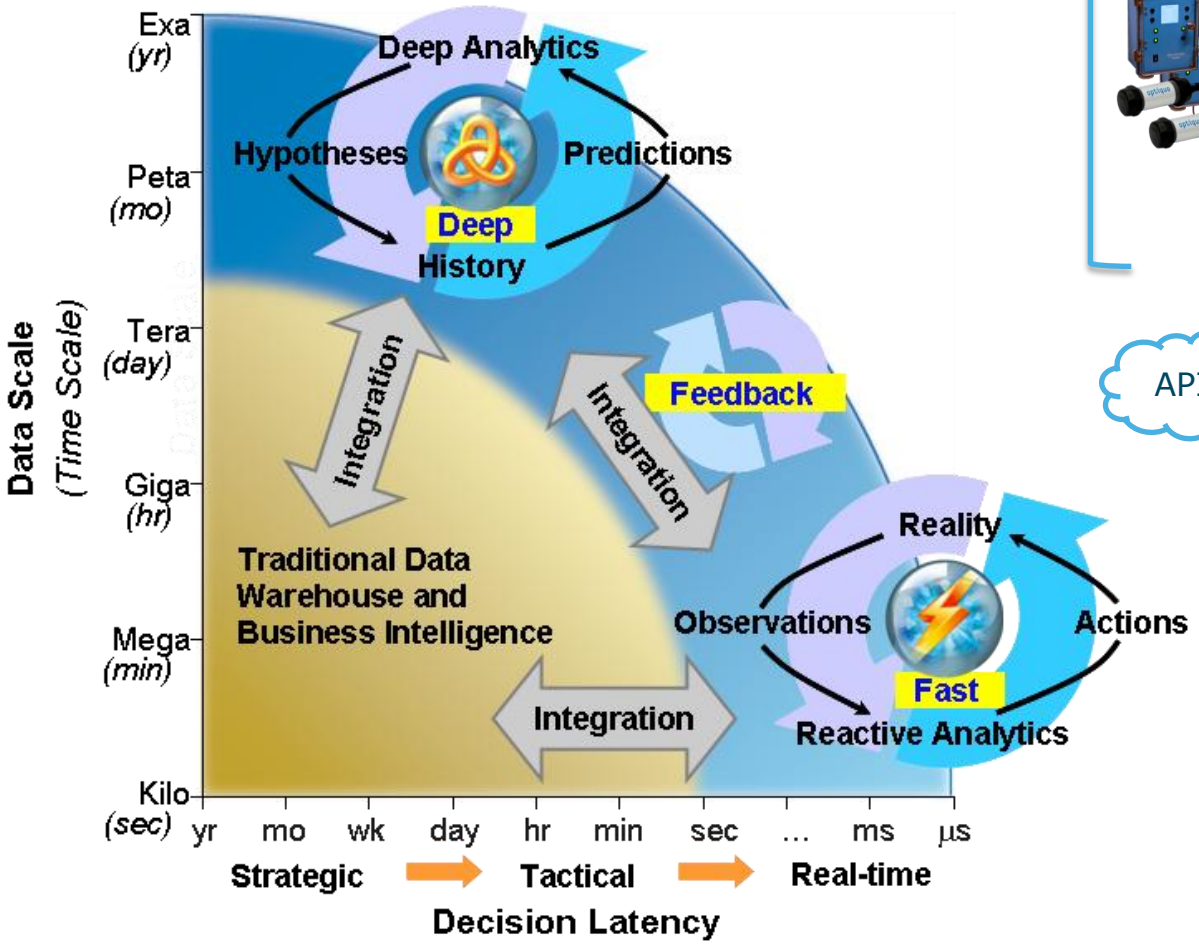
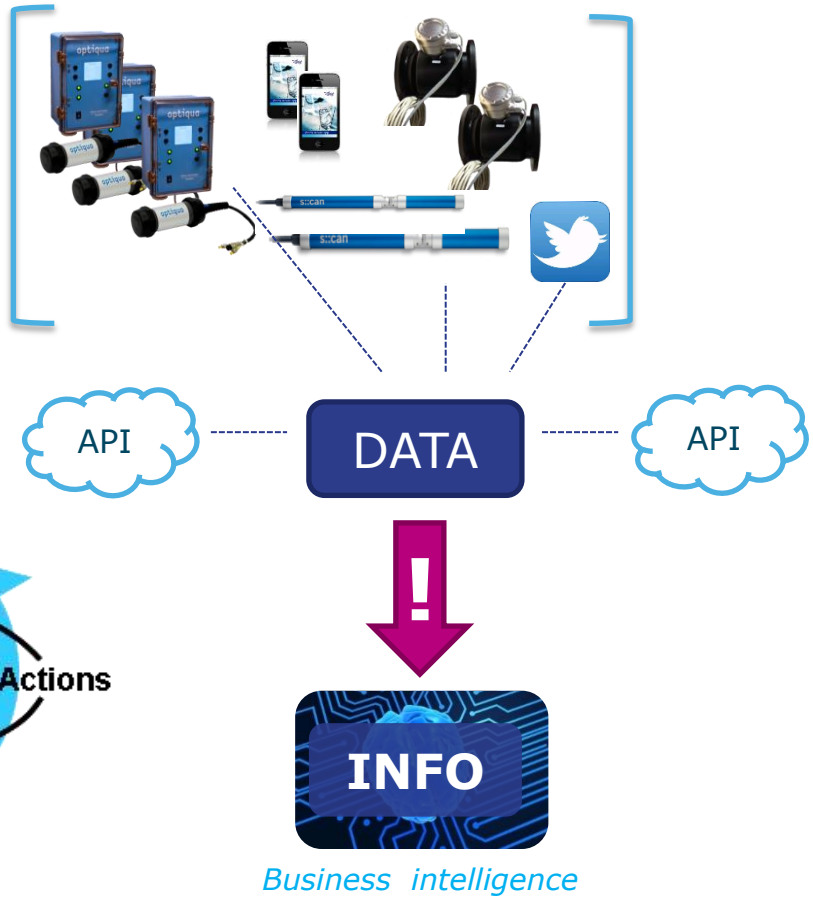
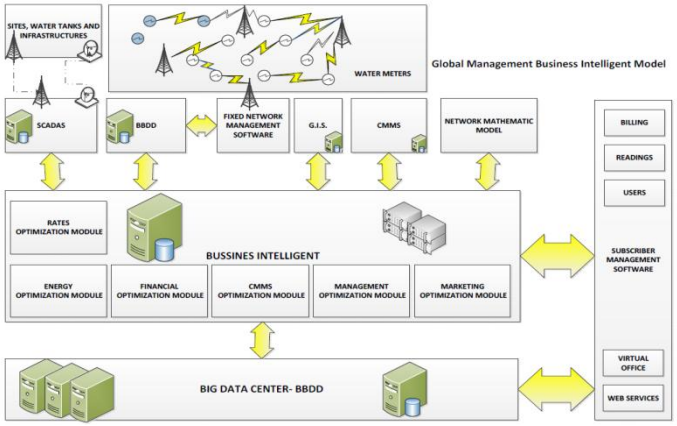
Upmost Challenge: Big Water Data





Project Objectives

- To demonstrate 12 innovative solutions
- To demonstrate 4 integrated solutions
- To establish and guard integration and standardisation aspects
- To establish business cases, deployment and potential market uptake routes



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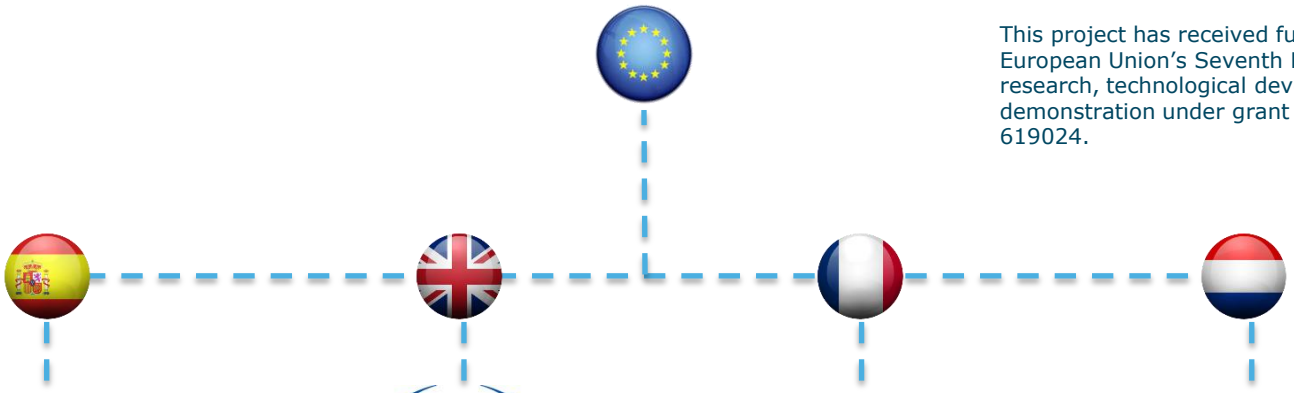
This project has received funding from the European Union's Seventh Programme for research, technological development and demonstration under grant agreement No 619024.



In progress
Burgos

TWUL Demo site
Thames valley:
Reading
32.000 km

Sunrise Demo site
Lille
12 km

VIP
Leeuwarden
2.200 km

- ✓ Project Budget: 12M€
- ✓ EU funding: FP7 INNO DEMO
- ✓ Project duration: 4 year
- ✓ Project Management: Vitens N.V.

- ✓ 12 innovative SMEs
- ✓ 3 water utilities
- ✓ 3 research institutes
- ✓ 1 company
- ✓ 2 platform organizations

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Consortium

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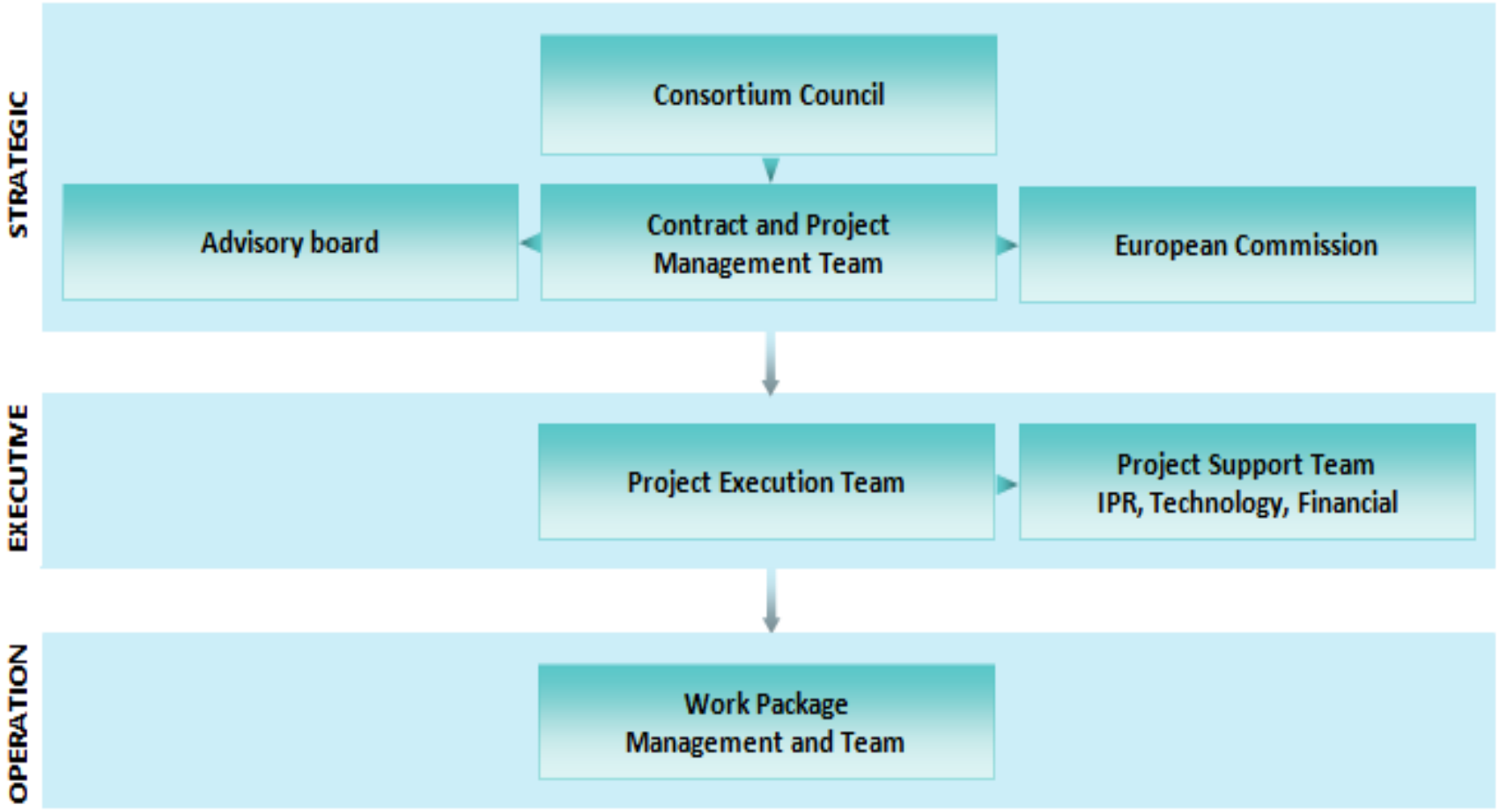
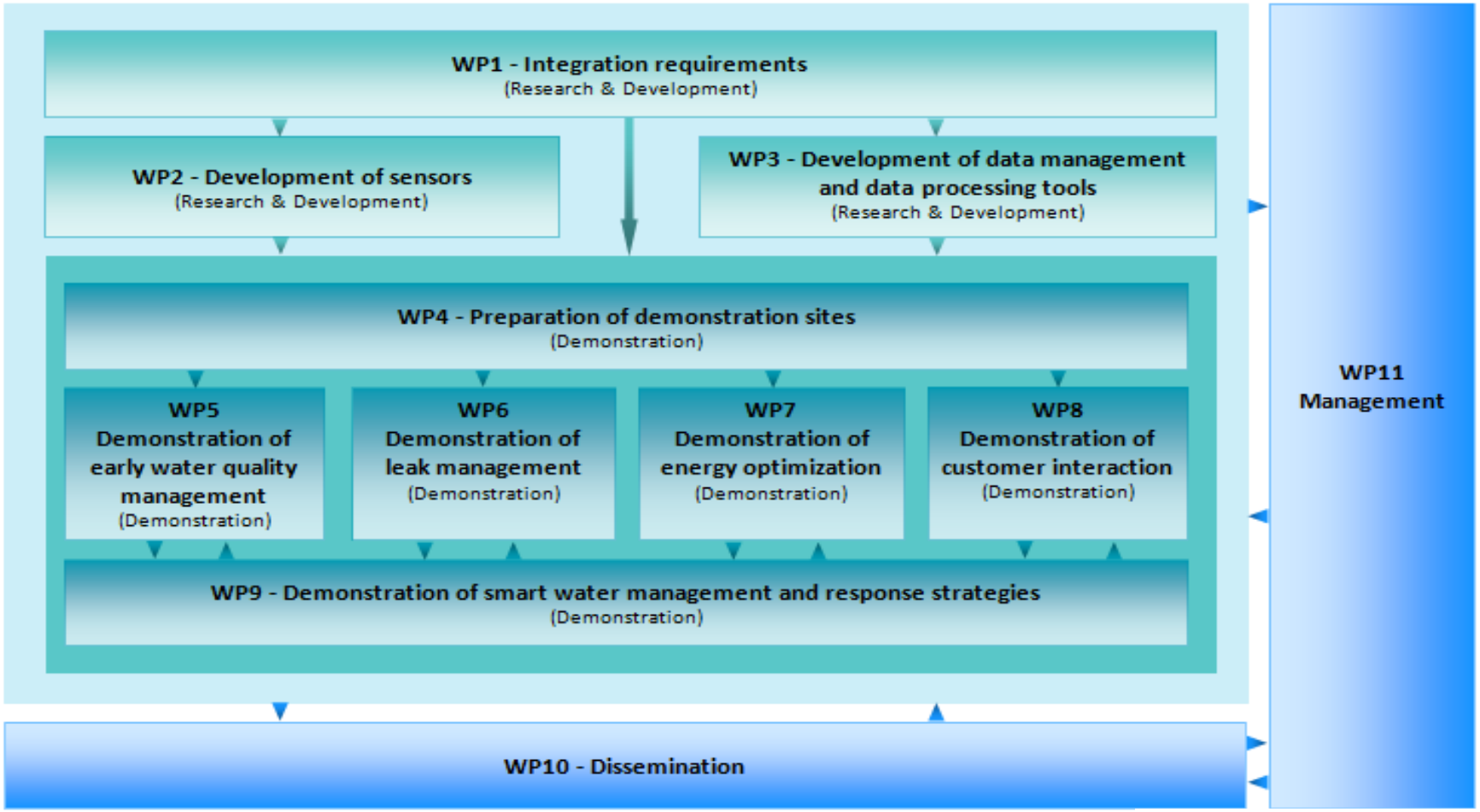
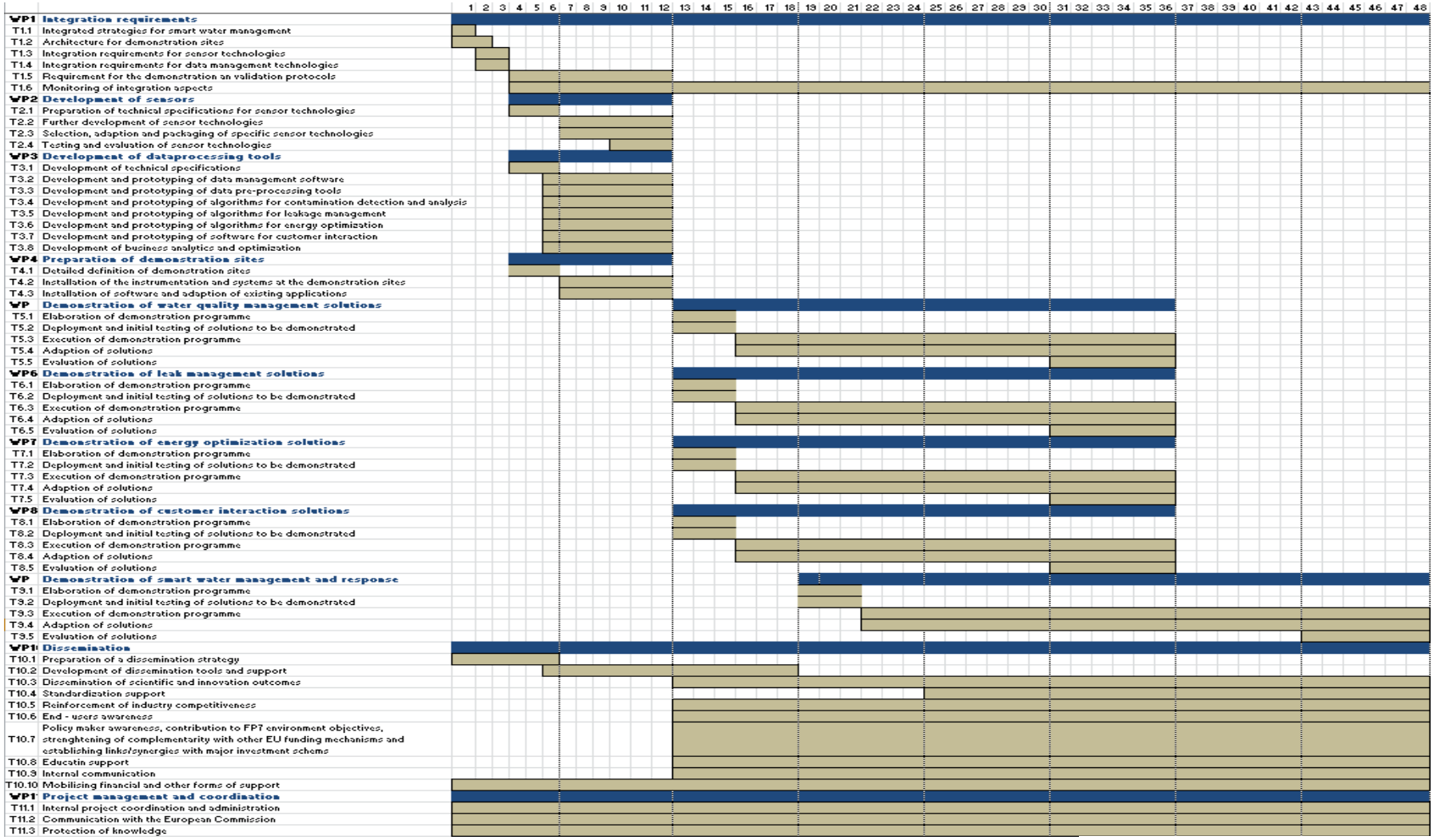
Project Organisation



Operational organisation



Project planning



Matrix

		Netherlands	Spain	France		Netherlands	Spain	United Kingdom	France		Netherlands	United Kingdom	France		Netherlands	United Kingdom
	WP 5: Water qualitiy management WP Leader: Bedert de Graaf	1.1 Detection, back-tracing and forward tracing of water quality events by using multiple generic sensors and detailed modelling	1.2 Detection of water quality events in a chlorinated network and optimization of chlorine usage using generic sensors	1.3 detection of water quality anomalies by advanced algorithms using multiple	WP 6: Leakage management WP Leader: Paul Linford	2.1 Detection and localization of leakages by using generic quality, flow sensors, pressure sensors at mains level and detailed	2.2 Detection and localization of leakages by smart meters at household level and heterogene	2.3. Detection and localization of leakages by smart meters and determination of leak growing and leak repair effectiveness by self-learning algorithms	2.4 Detection and localization of leakages by using AMR (automatic meter readers) at household	WP 7: Energy optimization WP Leader: Guus Witvoet	3.1 Energy optimization by using district metered areas, pressure and other sensors and detailed modelling	3.2 Energy optimization by pressure sensors, advanced modelling and self-learning algorithms	3.3 Energy optimization by using intelligent distributed controlers	WP 8: Customer interaction WP Leader: Chris Jakeway	4.1 Detection of water related events by using social media and provision of information to (vulnerable) customers	4.2 Influencing customer behaviour by supplying water usage information trough web and mobile applications
1	Vitens				1	Vitens				1	Vitens				1	Vitens		
2	Acciona Agua				2	Acciona Agua				2	Acciona Agua				2	Acciona Agua		
3	Twul				3	Twul				3	Twul				3	Twul		
4	UTSL				4	UTSL				4	UTSL				4	UTSL		
5	Intellect Water				5	Intellect Water				5	Intellect Water				5	Intellect Water		
6	Optisense				6	Optisense				6	Optisense				6	Optisense		
7	Syrinix				7	Syrinix				7	Syrinix				7	Syrinix		
8	CEA				8	CEA				8	CEA				8	CEA		
9	SCAN				9	SCAN				9	SCAN				9	SCAN		
10	Vernon Morris				10	Vernon Morris				10	Vernon Morris				10	Vernon Morris		
11	Quasset				11	Quasset				11	Quasset				11	Quasset		
12	Calm Water				12	Calm Water				12	Calm Water				12	Calm Water		
13	KWR				13	KWR				13	KWR				13	KWR		
14	CITC EURARFIC				14	CITC EURARFIC				14	CITC EURARFIC				14	CITC EURARFIC		
15	Arson				15	Arson				15	Arson				15	Arson		
16	USFD				16	USFD				16	USFD				16	USFD		
17	Homeria				17	Homeria				17	Homeria				17	Homeria		
18	Mycrometer				18	Mycrometer				18	Mycrometer				18	Mycrometer		
19	W-Smart				19	W-Smart				19	W-Smart				19	W-Smart		
20	Stereograph				20	Stereograph				20	Stereograph				20	Stereograph		
21	Solvd				21	Solvd				21	Solvd				21	Solvd		

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Example Work Package

Project number	619024 SmartWater4Europe																						
WP 2	Development of sensors	RTD																					
	WP Leader: Joep van den Broeke, Optisense																						
Start month	4																						
End month	12																						
Objectives																							
1	To further develop sensor technologies with additional																						
2	To package the selected sensing technologies for their physical insertion on the demonstration site																						
		Vitens	Acciona Agua	TWUL	USTL	Intellect Water	Optisense	Syrinix	CEA	S::can	Vernon Morris	Quasset	Calm Water	KWR	CITC	Arson	Sheffield	Homeria	Mycometer	W-Smart	Stereogra	Solvd	Total
	Person –months per participant	1,0			1,5		6,0			12,5									6,0				27,0
		1,0	0,0	0,0	1,6	0,0	6,0	0,0	0,0	12,5	0,0	0,0	0,0	0,0	0,0	0,0	0,0	0,0	6,0	0,0	0,0	0,0	27,1
T2.1	Preparation of technical specifications for sensor technologies	0,4			0,5		0,5			1,0													2,4
2.1a	All task participants will prepare technical specifications of the senors to be developed n this WP																						
T2.2	Further development of sensor technologies						4,5			7,0									4,0				15,5
2.2a	Optisense will further develop its sensors with layers and interfaces in order to classify events/contaminations																						
2.2b	S::can will evolve its nano::stations from prototype to (small) series production. This involves engineering for manufacturing, development of (pre)production tools and development of testing equipment																						
2.2c	Mycrometer will design, devlop and prototype a fully autometed, low maintenance sensor prototype for monitoring water microbiological quality. Also the system will include a data/algorithm process tool in order to facilitate the calculation of operational thresholds																						
T2.3	Selection, adaption and packaging of specific sensor				0,6					1,5									1,0				3,1
2.3a	An assessment of the commercial specific sensing technologies will be performed to select cost effective solutions capable of a reliable analysis of the complex mixtures of chemicals and biological agents present in low concentration in water. Simple, easy to package and to interconnect, low power strategies will be targeted. The elected biosensors technologies will be able to detect concentrations below the risk levels with devices and thecnologies consuming ultra-low power (10 - 100 nw for the primary signal conversion)																						
T2.4	Testing and evaluation of sensor technologies	0,6			0,5		1,0			3,0									1,0				6,1
2.4a	The task participants will test prototypes at pilot scale. The results will be used to finetune the demonstration work packages. Vitens will evaluate prototypes of technologies from Optisense, S::can, Intellitect and Mycrometer																						

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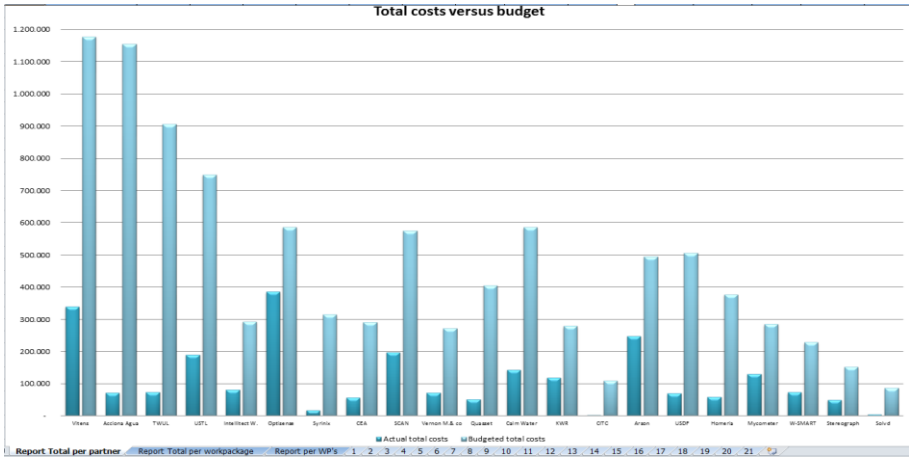
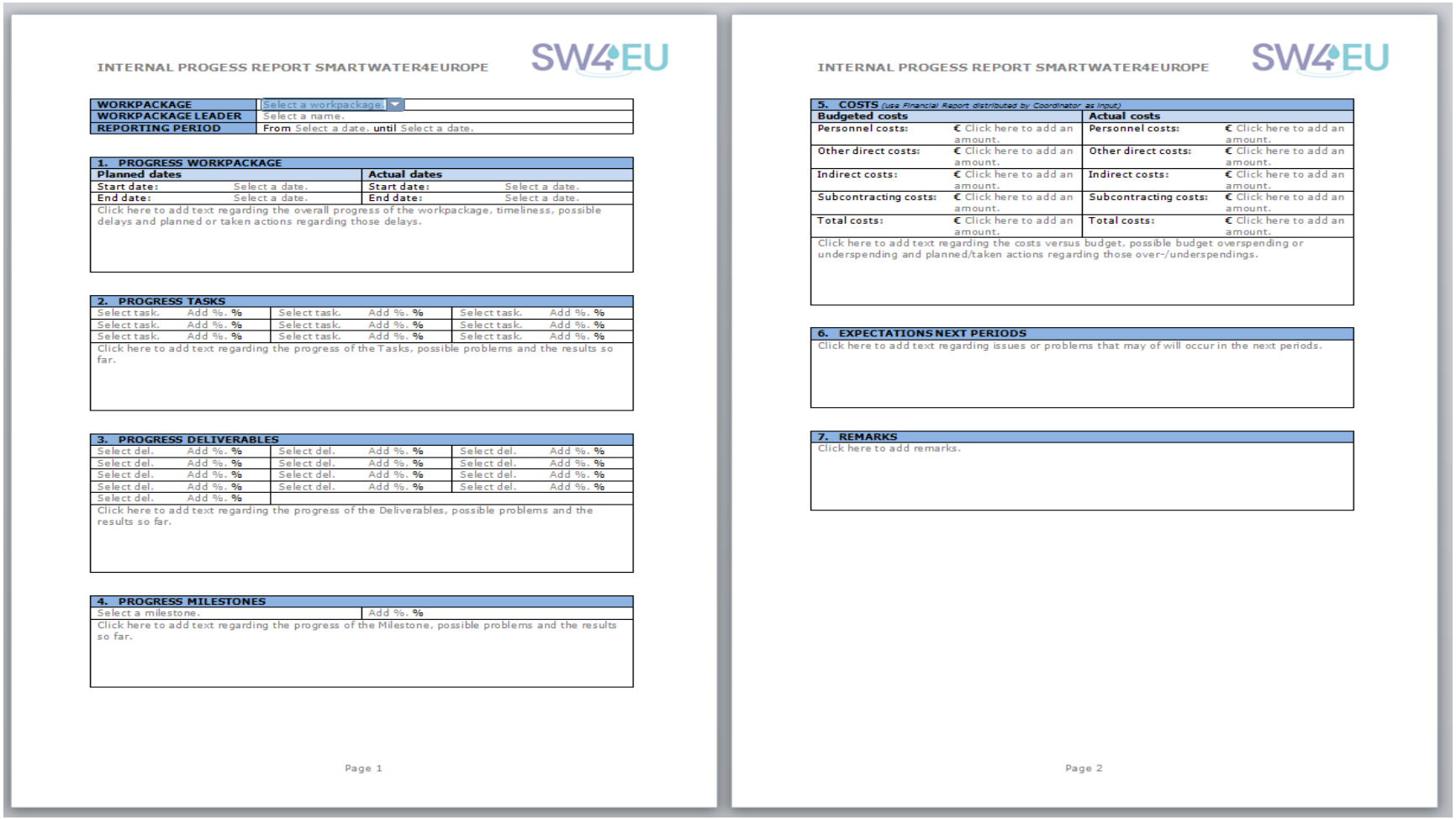
Quaterly Financial progress

Total project Nr./WP	Partner name	Personnel costs	Other direct costs	Indirect costs	Sub-contracting	Actual total costs	Budgeted total costs	Realised I %	Maximum total costs	Realised II %	Actual contribution	Budgeted contribution	Realised I %	Maximum contribution	Realised II %
1	Vitens	217.410	50.733	53.629	18.170	339.942	1.177.219	29%	329.232	28%	230.052	814.739	28%	224.697	28%
2	Acciona Agua	51.978	7.755	11.947	-	71.680	1.154.407	6%	71.680	6%	38.573	603.435	6%	38.573	6%
3	TWUL	56.881	4.042	12.185	-	73.108	905.550	8%	73.108	8%	41.735	485.253	9%	41.735	9%
4	USTL	116.581	2.408	71.394	-	190.383	749.374	25%	190.383	25%	113.285	429.764	26%	113.285	26%
5	Intellitect W.	7.020	43.111	30.079	-	80.210	292.476	27%	80.210	27%	41.917	159.760	26%	41.917	26%
6	Optisense	189.953	41.776	139.037	14.570	385.337	586.080	66%	315.425	54%	264.298	374.440	71%	211.865	57%
7	Syrinix	10.362	572	6.561	-	17.495	314.296	6%	17.495	6%	8.818	169.624	5%	8.818	5%
8	CEA	35.080	1.115	20.339	-	56.535	291.057	19%	56.535	19%	42.714	169.472	25%	42.714	25%
9	SCAN	100.533	19.293	71.895	5.950	197.670	574.834	34%	197.670	34%	144.302	374.589	39%	144.302	39%
10	Vernon M.& co	30.667	14.036	26.822	-	71.525	271.168	26%	69.047	25%	39.938	163.382	24%	38.699	24%
11	Quasset	30.560	1.216	19.066	-	50.842	405.320	13%	50.842	13%	35.212	248.760	14%	35.212	14%
12	Calm Water	60.450	8.000	41.070	33.500	143.020	585.000	24%	143.020	24%	101.265	348.800	29%	101.265	29%
13	KWR	57.039	590	61.602	-	119.231	278.520	43%	75.751	27%	67.673	161.000	42%	45.933	29%
14	CITC	1.668	-	1.001	-	2.669	109.966	2%	2.310	2%	1.912	69.390	3%	1.733	2%
15	Arson	56.403	98.422	92.895	-	247.720	495.188	50%	247.720	50%	141.140	300.181	47%	141.140	47%
16	USDF	37.201	2.736	23.963	4.955	68.855	506.200	14%	68.855	14%	45.640	309.000	15%	45.640	15%
17	Homeria	25.995	10.576	21.943	-	58.514	376.600	16%	58.514	16%	41.340	219.700	19%	41.340	19%
18	Mycometer	68.910	12.466	48.826	-	130.202	284.806	46%	120.473	42%	93.510	180.454	52%	86.212	48%
19	W-SMART	56.250	2.500	11.750	3.000	73.500	228.571	32%	73.500	32%	48.030	149.071	32%	48.030	32%
20	Stereograph	30.912	-	18.547	-	49.459	151.400	33%	49.459	33%	33.194	99.800	33%	33.194	33%
21	Solvd	2.895	140	1.821	-	4.856	86.408	6%	4.856	6%	2.428	48.104	5%	2.428	5%
-	Spare budget					-	218.792	0%	-	0%	-	114.570	0%	-	0%
Total		**1.244.749**	**321.488**	**786.370**	**80.145**	**2.432.752**	**10.043.232**	**24%**	**2.296.084**	**23%**	**1.576.976**	**5.993.288**	**26%**	**1.488.732**	**25%**
Budget costs		**4.769.227**	**1.684.769**	**3.064.736**	**524.500**	**10.043.232**									
Realised %		**26%**	**19%**	**26%**	**15%**	**24%**									

RTD	738.528	87.029	461.590	39.450	**1.326.597**	**1.829.488**	**73%**	**2.417.558**	**0%**
DEMO	382.757	224.119	286.658	19.525	**913.059**	**7.001.118**	**13%**	**5.229.297**	**0%**
OTHER	46.993	6.663	19.024	21.170	**93.850**	**712.640**	**13%**	**528.286**	**0%**
MGT	76.471	3.677	19.098	-	**99.246**	**499.986**	**20%**	**263.488**	**0%**
Total	**1.244.749**	**321.488**	**786.370**	**80.145**	**2.432.752**	**10.043.232**	**24%**	**8.438.629**	**0%**



Quaterly operational progress



INTERNAL PROGESS REPORT SMARTWATER4EUROPE

WORKPACKAGE	Select a workpackage.
WORKPACKAGE LEADER	Select a name.
REPORTING PERIOD	**From** Select a date. **until** Select a date.

1. PROGRESS WORKPACKAGE

Planned dates		**Actual dates**	
Start date:	Select a date.	**Start date:**	Select a date.
End date:	Select a date.	**End date:**	Select a date.

Click here to add text regarding the overall progress of the workpackage, timeliness, possible delays and planned or taken actions regarding those delays.

2. PROGRESS TASKS

Select task.	Add %. **%**	Select task.	Add %. **%**	Select task.	Add %. **%**
Select task.	Add %. **%**	Select task.	Add %. **%**	Select task.	Add %. **%**
Select task.	Add %. **%**	Select task.	Add %. **%**	Select task.	Add %. **%**

Click here to add text regarding the progress of the Tasks, possible problems and the results so far.

3. PROGRESS DELIVERABLES

Select del.	Add %. **%**	Select del.	Add %. **%**	Select del.	Add %. **%**
Select del.	Add %. **%**	Select del.	Add %. **%**	Select del.	Add %. **%**
Select del.	Add %. **%**	Select del.	Add %. **%**	Select del.	Add %. **%**
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Select del.	Add %. **%**				

Click here to add text regarding the progress of the Deliverables, possible problems and the results so far.

4. PROGRESS MILESTONES

Select a milestone.	Add %. **%**

Click here to add text regarding the progress of the Milestone, possible problems and the results so far.

Page 1

INTERNAL PROGESS REPORT SMARTWATER4EUROPE

5. COSTS *(use Financial Report distributed by Coordinator as input)*

Budgeted costs		**Actual costs**	
Personnel costs:	€ Click here to add an amount.	**Personnel costs:**	€ Click here to add an amount.
Other direct costs:	€ Click here to add an amount.	**Other direct costs:**	€ Click here to add an amount.
Indirect costs:	€ Click here to add an amount.	**Indirect costs:**	€ Click here to add an amount.
Subcontracting costs:	€ Click here to add an amount.	**Subcontracting costs:**	€ Click here to add an amount.
Total costs:	€ Click here to add an amount.	**Total costs:**	€ Click here to add an amount.

Click here to add text regarding the costs versus budget, possible budget overspending or underspending and planned/taken actions regarding those over-/underspendings.

6. EXPECTATIONS NEXT PERIODS

Click here to add text regarding issues or problems that may of will occur in the next periods.

7. REMARKS

Click here to add remarks.

Page 2

Demo Sites

Site Theme	Netherlands	Spain	United Kingdom	France
Water qualitiy management	1.1 Detection, back-tracing and forward tracing of water quality events by using multiple generic sensors and detailed modelling	1.2 Detection of water quality events in a chlorinated network and optimization of chlorine usage using generic sensors		1.3 detection of water quality anomalies by advanced algorithms using multiple specific sensors
Leakage management	2.1 Detection and localization of leakages by using generic quality, flow sensors, pressure sensors at mains level and detailed modelling	2.2 Detection and localization of leakages by smart meters at household level and heterogeneous data sources	2.3. Detection and localization of leakages by smart meters and determination of leak growing and leak repair effectiveness by self-learning algorithms	2.4 Detection and localization of leakages by using AMR (automatic meter readers) at household level, flow sensors, pressure sensors and algorithms
Energy optimization	3.1 Energy optimization by using district metered areas, pressure and other sensors and detailed modelling		3.2 Energy optimization by pressure sensors, advanced modelling and self-learning algorithms	3.3 Energy optimization by using intelligent distributed controllers
Customer interaction	4.1 Detection of water related events by using social media and provision of information to (vulnerable) customers		4.2 Influencing customer behaviour by supplying water usage information trough web and mobile applications	

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What's really smart ?

- *A water grid becomes really smart having **sensors in minimal quantities** at strategic points acquiring real-time data combined with **available data*** enabling a **proactive network***

- ** (internal AND external)*